

CLAIMS

1. A steering wheel assembly comprising:

a steering wheel armature, an air bag module, an electrical switch, and an air bag module retention system including at least one foot and at least one spring;

- 5 wherein said at least one spring is sufficiently configured to retain said at least one foot in a snap-fit engagement thereby to fasten said air bag module to said armature; wherein said at least one spring is sufficiently configured to bias said air bag module in a first position in which said switch is open; and wherein said at least one spring is configured to deform upon sufficient application of force to said air bag module thereby to allow
10 movement of said air bag module to a second position in which said switch is closed.

2. The steering wheel assembly of claim 1, wherein said retention system further includes at least one surface and at least one member, and wherein said at least one surface is sufficiently configured and positioned to prevent rotation of said air bag module with respect to the armature by restricting relative movement between said at
5 least one member and said at least one surface.

3. The steering wheel assembly of claim 2, wherein said at least one surface is sufficiently configured and positioned to prevent radial movement of said air bag module with respect to said armature by restricting relative movement between said at least one member and said at least one surface.

4. The steering wheel assembly of claim 1, wherein said at least one spring defines a slot for receiving said at least one foot during snap-fit engagement of said at least one foot.

5. The steering wheel assembly of claim 1, wherein said at least one foot defines a lead-in surface and a notch; wherein said air bag module retention system

further includes at least one engagement portion operatively connected to said at least one spring; and wherein the said bag module retention system is sufficiently configured so that said air bag module is operatively connectable to said armature by (1) causing the lead-in surface of said at least one foot to contact a respective one of said at least one engagement portion, and (2) exerting a force on said air bag module to cause deformation of said at least one spring and movement of said at least one engagement portion along the corresponding lead-in surface and into the corresponding notch.

5 6. The steering wheel assembly of claim 5, further comprising a reaction surface, and wherein said spring element is sufficiently configured so that, when said force is exerted on said airbag module, a portion of said spring element deflects to contact the reaction surface to restrict inward movement of said portion of said spring element during insertion.

 7. The steering wheel assembly of claim 1, wherein said airbag module retention system includes at least one member sufficiently positioned to restrict outward movement of said at least one engagement portion thereby to restrict outward movement of said air bag module.

 8. The steering wheel assembly of claim 1, wherein one of the airbag module and the armature is configured for snap-fit engagement with said at least one spring element prior to assembly of said airbag module and said armature.

 9. The steering wheel assembly of claim 1, wherein said at least one spring element includes a feature attached thereto for engagement with a tool to deflect said spring element.

 10. The steering wheel assembly of claim 1, further comprising a conductive path for a horn circuit operatively connected to said at least one switch; wherein one of the armature and the air bag module defines a notch through which a

portion of the conductive path extends; and wherein said at least one spring element and
5 said armature cooperate to retain the portion of the conductive path in the notch.

11. The steering wheel assembly of claim 1, further comprising a travel stop to restrict inward movement of said air bag module.

12. The steering wheel assembly of claim 1, wherein said steering wheel armature is sufficiently shaped so that it is formable with an upper tool, a lower tool, and without a slide.

13. The steering wheel assembly of claim 1, wherein said air bag module includes a structural portion, and wherein the structural portion is sufficiently shaped so that it is formable with an upper tool, a lower tool, and without a slide.

14. A method of assembling a steering wheel comprising:

configuring a steering wheel armature to support a horn switch and to receive an air bag module; and

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employing at least one spring element to provide a snap-fit retention of said air bag module to said steering wheel armature, said at least one spring element configured to bias said air bag module in a first position in which a switch is open, and configured to allow selective movement of said air bag module to a second position with
10 respect to said armature to close said switch.

15. The method of claim 14, further comprising assembling said air bag module to said steering wheel armature via the snap-fit retention provided by said at least one spring element.

16. The method of claim 15, wherein one of the air bag module and the armature is configured for snap-fit engagement to said at least one spring element prior to said assembling said air bag module to said steering wheel armature.

17. The method of claim 16, wherein the method further comprises connecting said horn switch and a conductive path to said armature, the conductive path being operatively connected to said horn switch; and wherein snap-fit engagement of said at least one spring to the armature prior to said assembling said air bag module to said steering wheel armature provides retention of said horn switch and the conductive path to said armature.

18. The method of claim 14, further comprising molding or casting said armature with an upper tool and a lower tool, and without a slide.

19. The method of claim 14, wherein said air bag module includes a structural portion, and wherein the method further comprises molding or casting the structural portion with an upper tool and a lower tool, and without a slide.

20. A steering wheel assembly comprising:

an armature, an air bag module, an electrical switch, and an air bag module retention system including at least one foot and at least one spring, wherein said at least one spring is sufficiently configured to retain said at least one foot in a snap-fit engagement thereby to fasten said air bag module to said armature, wherein said at least one spring is sufficiently configured to bias said air bag module in a first position wherein said switch is open, and is configured to deform upon sufficient application of force to said air bag module thereby to allow movement of said air bag module to a second position wherein said switch is closed;

wherein said retention system further includes at least one surface and at least one member, and wherein said at least one surface is sufficiently configured and positioned to prevent rotation of said air bag module with respect to said armature by
15 restricting relative movement of said at least one member with respect to said at least one surface; and

wherein said at least one foot defines a lead-in surface and a notch;
wherein said air bag module retention system further includes at least one engagement
20 portion operatively connected to said at least one spring; and wherein said air bag module retention system is sufficiently configured so that said air bag module is operatively connectable to said armature by (1) causing the lead-in surface of said at least one foot to contact a respective one of said at least one engagement portion, and (2) exerting a force on said air bag module to cause deformation of said at least one spring and movement of
25 said at least one engagement portion along the corresponding lead-in surface and into the corresponding notch.